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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VIII, MONTANA OFFICE
FEDERAL BUILDING, 301 S. PARK, DRAWER 10096
HELENA, MONTANA 59626-0096

Ref: 8MO

October 17, 1989

Mr. Jon C. Nickel
Industrial Quality Manager
ASARCO Incorporated
Box 1230
East Helena, MT 59635

Re: Response by EPA to comments received from ASARCO concerning elements of the Proposed Plan for the Process Ponds Operable Unit.

Dear Jon:

Your letter of September 20 provided the EPA with comments concerning the Proposed Plan for cleanup of the process ponds at the East Helena Smelter Site. As I indicated in my letter of October 2, your comments and proposals raised both expected and unexpected issues. The EPA considered them carefully and, after consulting with state officials, reached conclusions that I relay to you at this time.

First, I wish to emphasize as you have already that the EPA's Proposed Plan reflects practical solutions to cleaning up the process ponds. Generally, the alternatives selected by EPA were taken directly from the feasibility study, or they are logical modifications of it. The issues that have surfaced should not overshadow the fact that there is much agreement concerning the overall remedy, and that agreement is an extension of the cooperative spirit that has prevailed throughout the process to date.

The issues are discussed below in the order that you submitted them on September 20, which does not necessarily reflect their relative importance to the EPA.

In-place Treatment of Process Fluids in Lower Lake

The EPA selected Alternative 4a as the preferred remedy for Lower Lake. The water treatment aspect of Alternative 4a would require a water treatment facility on site. The rationale for selecting this standard, proven method of water treatment was supported by more than a few factors. Among them was the uncertainty associated with the proposal to treat a pond

Site East Helena
File # 1.10 and 2.00
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Admin. Record: Yes ☒ No ☐
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containing 11 million gallons of contaminated water in place. In the absence of treatability tests, the capability of an in situ treatment method, as it was presented in the feasibility study as a component of Alternative 5s, was simply too uncertain.

In both the Proposed Plan and public meeting of September 12, the EPA acknowledged that small scale laboratory tests of in situ treatment methods have been successfully carried out by Asarco. It was also acknowledged that there is a significant difference in costs associated with the two alternative water treatment methods. The difference is approximately \$5 million; the in situ treatment method being the lesser expensive (\$8.5 million vs. \$3.5 million).

But, in the absence of a concrete proposal by Asarco to conduct treatability tests on a large scale, in the absence of an independent assessment of the prospects for successfully treating Lower Lake water in place, and in the absence of any public involvement in this decision, the EPA and state concluded that Alternative 4a was needed to assure that the greatest degree of protectiveness would be achieved.

The EPA also acknowledged, however, in both the Proposed Plan and the public meeting, that Alternative 5s should be reevaluated if new and relevant information becomes available. In light of your September 20 proposal for pilot scale tests, in light of requests by concerned residents and local government officials, and in light of independent assessments by the U.S. Bureau of Mines and Professor Twidwell of the Montana College of Mineral Science and Technology, the EPA feels that the in situ treatment method using ferric chloride now qualifies as the preferred method to be applied in the remedy.

The Record of Decision will set forth requirements for conducting the treatability tests with EPA oversight. As we have discussed, it will also require a contingency remedy (Alternative 4a) to be put into effect if the in situ treatment method fails to bring all of the elements of concern--arsenic in particular--down to specified levels. The Record of Decision will set forth those specified levels, which must be both protective and achievable.

Retain Speiss Granulating Pond for Emergency Overflow

The EPA has considered your request to retain that portion of the speiss granulating pond that remains in place today, but cannot approve this request.

Soils under the speiss granulating pond and pit contain up to 1,750 mg/kg arsenic and 5,500 mg/kg lead. In the saturated zone, dissolved arsenic is as high as 700 mg/l. These

contaminated levels, as well as those under the acid plant, have been shown to be the most significant contributors to ground water contamination north of the plant site. During recent public meetings, both you and I have referred repeatedly to Hydrometrics' graphic representation of the sources of ground water contamination off the plant site. The speiss granulating area stands out and it has left an indelible impression in everyone's mind with respect to cause and source of the arsenic plume.

As you have indicated, the replacement tank that will be constructed will be a RCRA-type tank. It will have leak detection and secondary containment capability in addition to "floats" and valves that will protect against the possibility of tank overflow. Such features were designed specifically for preventing spills or leakage of these types of fluids.

The principal objective of moving the process ponds operable unit ahead of the remaining operable units was to effect a source removal without unnecessary delay. Laws governing these activities require "early" actions to be consistent with the expected final, overall remedy. Clearly, leaving such high levels of contamination in this area would be inconsistent with the long-term goals of cleaning up this site.

Excavating Soils in the Acid Plant Water Treatment Facility

It is possible there is no disagreement with respect to this comment.

The EPA made its recommendation to excavate acid plant soils to the practical limits largely on the basis of EP toxicity test results. Soil core sampling and analysis showed that soils in this area exhibit characteristics of EP toxicity throughout the entire soil profile tested (to 20-22 ft., at which depth coarse, ground water-bearing gravels are found). Soils here contain up to 12,000 mg/kg arsenic and 14,000 mg/kg lead in the uppermost horizon.

Our recommendation is based upon sampling and analysis of only one drill hole (DH-19). More drill holes will be needed before actual excavation takes place. In the area between the settling dumpsters and the adjacent sediment drying pads, where no samples were taken, it is quite possible that these soils will not require removal beyond 4-6 ft. The same possibility exists for soils under the sediment drying area between Upper Lake and Lower Lake. Until more holes are drilled during remedial design, depth of excavation and volume of soils requiring treatment from this area are a rough estimate at best.

With respect to factors that affect ASARCO's ability to excavate down to the coarse gravels, the EPA readily recognizes the need to consider practical limits of excavation. In those areas where soil leach tests indicate the need for deep excavation, we agree that the structural integrity of adjacent buildings needs to be carefully considered. On the other hand, we do not agree that the practical limits of excavation can be defined at this point by "the depth to which normal excavating equipment can reach to effectively excavate soils." Normal excavating equipment is a term that is better suited to definition in the remedial design phase. Therefore, the EPA withholds judgment on this aspect of your comment until that time.

Implementation Time for Replacement of the Speiss Granulating Pit

Many of the arguments supporting complete removal of the speiss granulating pond (discussed above) apply as well to this discussion. The known high concentrations of arsenic and metals in soils from both the speiss pond and pit leave no doubt, at least in my mind, that they should be removed. But, the issue here--with respect to the speiss pit alone--is one of timing.

The Proposed Plan recommended immediate action on the speiss pit. If that is done, it is conceivable that pit replacement and excavation could be done sometime during 1990. (The two years described in the Proposed Plan allowed for smelting time.) One advantage of following the proposed schedule is this: It assures that all known source problems will be corrected at the same time. The importance of that has become apparent to us as we have carefully considered this request.

A marked improvement in the quality of ground water off-site is expected once the remedy for all four process ponds is complete. But, if action on the speiss pit is delayed, for as much as two years, the full benefit of this remedy will not be known for perhaps another two years or more. It is likely that such a delay would have implications beyond the process ponds operable unit and into the comprehensive ground water operable unit.

On the other hand, there is apparently a significant additional cost associated with immediate action on the speiss pit. One needs to see the pit in relation to the dross reverberatory building to appreciate the difficulties that would be encountered during removal of the pit and underlying soils.

We are not in a position to dispute the statement that the proposed schedule would result in a one-month shutdown of the plant. However, we think it is important to carefully determine the time that it would actually take to replace the speiss pit

ahead of your schedule for changes to the dross reverberatory building and weigh those costs against the cost of an interim measure that will eliminate leakage of fluids from the pit.

An interim measure that assures there will be no more leakage from this process unit seems to be the only solution to approving the delay that you have requested. A steel liner, such as we have discussed, or some other effective measure, might accomplish the objective. Anything less could have a serious impact on your ability to monitor the effect of this source removal, and anything less would probably delay decisions concerning the ground water operable unit. Such a delay would be unacceptable to the EPA.

The Record of Decision will reflect the EPA's willingness to agree to your request for a delay in removing the speiss pit; however, it will also reflect the need for an effective interim measure. Details concerning the interim measure can be developed during the remedial design phase and will be subject to the EPA's approval. If you choose to proceed with removal of the speiss pit after all, details will still be developed in the remedial design phase and they will as well be subject to the EPA's approval.

Smelting Excavated Soils and Sediments

The EPA's initial response concerning this issue was submitted to you in my letter of October 2. I presented the rationale for our estimation of smelting times, which add up to 12-15 years. That estimate was based on the assumption that the implementation times given in the feasibility study are an accurate representation of the time needed by ASARCO to carry out the remedy selected for each process pond. However, the new information contained in your letter of September 20, concerning the problems that would be encountered if the blast furnace were to receive more than 0.5 percent "dead charge," appears not to have been considered in the feasibility study.

It is certainly not the EPA's intention to punish ASARCO for such an oversight, if that is the case. Rather, we are interested in pursuing ways to assist ASARCO in assuring that smelting of these contaminated wastes can be carried out within a reasonable period and without unnecessary disruption to the plant's operation.

You have proposed one possible solution: Separate the cobbles and boulders from the finer materials; wash the cobbles and boulders; and store them on site. We agree with that proposal and invite you to develop it in the remedial design phase. Based on conversations with Robert Miller and my own observations of past excavation at the site, the cobbles and

boulders may constitute up to 50 percent of the volume of soils requiring removal at the speiss granulating area and acid plant.

Another solution, to which I alluded in my recent letter, might be found in reevaluating the percentage of dead charge that may be fed into the blast furnace. The sediments from Lower Lake and Thornock Lake constitute approximately 75-80 percent of the volume of waste requiring smelting. These are fine-grained sediments that I have thought might substitute as flux.

Yet another solution may become evident following additional soil sampling that will occur during the remedial design phase. Particularly in the areas adjacent to the two drying pads for the acid plant water treatment facility, it is quite possible that excavation will not be necessary beyond 4-6 ft., as opposed to 20 ft. If that is the case, a substantially smaller volume of soils will require treatment because of the sheer size of the area involved. (Please see the discussion above concerning soils under the acid plant.)

Finally, your comments questioned the EPA's modifications to the feasibility study pertaining to deeper excavation at three of the four process ponds. (There is no dispute concerning former Thornock Lake.)

Excavation to two feet below the artificially deposited layer of sludge and sediments in Lower Lake is not an arbitrary decision. It is a cleanup objective which considers the following factors.

1. As bottom sediments of a surface impoundment at a lead smelter, the sludge and sediment layer has been listed by the EPA as a hazardous waste. It must be removed and treated as such.
2. The "naturally" deposited (fluvial) sediments underneath the layer of artificially deposited sediments are known to contain up to 770 mg/kg arsenic and 2,500 mg/kg lead. Other heavy metals, all of which are hazardous substances, are similarly elevated. Generally, the highest levels of these contaminants are found in the uppermost horizon of naturally deposited sediments; however, ASARCO's RI data (drill holes LH-1 and LH-2) show that even if two feet of this layer were excavated, up to 770 mg/kg arsenic and 2,500 mg/kg lead would still be contained in the remaining sediments.
3. The results of EP toxicity tests indicate that at some point below the artificially deposited layer of sediments, leachate produced in the laboratory meets primary MCLs for arsenic, cadmium and lead. That is encouraging, but it does not necessarily follow that under natural conditions fresh water coming into contact with these contaminated sediments

will also meet the MCLs. Contrary to what was stated in your letter of September 20 ("Concentrations of leachate from samples of the underlying natural strata not only pass the EP toxicity test, but are below primary drinking water standards."), the leachate produced in six of seven separate tests failed to meet all three MCLs. In one case, the leachate produced from EP toxicity testing of sediments from a depth of 14-16 ft. contained 0.075 mg/l arsenic, which exceeds the MCL of 0.05 mg/l. Nevertheless, the EP toxicity test data show a positive trend as depth increases. It is reasonable to assume that within 1-5 ft. below the artificially deposited layer the leachate produced will either meet the MCL or exceed it by a rather small margin.

4. The cost associated with excavating and smelting all contaminated sediments below Lower Lake was estimated by ASARCO to be \$78 million. The cost associated with excavating and smelting the artificially deposited layer plus two feet into the naturally deposited layer was estimated to be \$2.3 million. The cost associated with excavating and smelting the artificially deposited layer plus one foot into the naturally deposited layer was estimated to be \$1.8 million.

5. Lower Lake will remain accessible. There is no need to impose an excavation requirement that may be more stringent than what is reasonably expected to offer long-term protection to the ground water. Continued monitoring will enable the EPA to measure the effectiveness of this remedy. If additional excavation is deemed necessary, it can be easily resumed.

These factors considered together brought the EPA to the conclusion that an acceptable margin for excavation below the artificially deposited layer would be two feet. Some EPA and state officials who considered this issue felt that the soil action level ought to be consistent with those adopted at other mining sites involving arsenic and lead. That approach would have required substantially deeper excavation and it would have imposed a much higher cost. The cleanup objective selected by the EPA, as presented in the Proposed Plan, is a level that is expected to protect the ground water, once Lower Lake water is treated, at a reasonable cost.

The Record of Decision for the process ponds remedy is undergoing a final review. It is expected that the EPA's Administrator of Region VIII, James Scherer, or his designated representative, will sign the Record of Decision within the next two weeks. I will provide you with a copy of the document as soon as I am able to do so.

Sincerely,

A handwritten signature in dark ink, appearing to read "D. Scott Brown". The signature is fluid and cursive, with the first name "D." being a large, stylized initial.

D. Scott Brown
Remedial Project Manager

cc: John Wardell, 8MO
Sandra Moreno, 8MO
Greg Mullen, MDHES
David Bunte, CH2M Hill
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